PROGRESS REPORT

GRANT NUMBER: 7310035

High Capacity Airborne Wind Turbine

Altaeros Energies

11/01/2014 – 01/31/2015

Deliverables Submitted
No official deliverables were scheduled to be submitted this period.

Budget
No costs were submitted for this period.

Schedule Status
In 2014, we indicated that an FAA permitting delay was resulting in a delay of the overall project. We then put the project on hold for up to twelve months until we had better insight in regards to our FAA permitting status, and to push back the planned installation of our turbine to late 2015 / early 2016. AEA project coordinator approved a plan of action to delay the project.

Percent Complete

Tasks/Milestones	Start Date	End Date	Percent Complete
Task 1: Final site selection, permitting, and community forum	Mar-13	Aug-15	70%
Task 2: 30 kw turbine assembly and testing in Maine	Jul-13	Nov-15	35%
Task 3: Complete instrumentation plan and shakedown test plan	Jul-13	Nov-15	30%

Work Progress

Task 1:

- Cost Share
  - Altaeros completed a multi-million dollar private investment round in November 2014 that has enabled the funding of all cost share for the project, and will accelerate the project technology development. https://gigaom.com/2014/12/04/softbank-backs-high-altitude-wind-startup-altaeros/

- Permitting
  - Altaeros has had multiple phone conversations with the FAA to help clarify the details of how they want to receive the project data (coordinates and elevation) for the unique nature of our high altitude wind turbine project. This has required Altaeros to collect additional data and conduct additional modeling on the blowdown of the turbine (the maximum distance it can be blown in any direction). There has also been confusion in regards to the exact latitude and longitude of the project site, which has required Altaeros to resubmit its forms. Altaeros is in the process of resubmitting its application, which it has delayed as the FAA evaluates civilian UAV projects and a competing airborne wind project by Makani Power in Hawaii.

- Community Assessment
  - Altaeros has continued to receive significant additional positive press in regards to the wind energy technology and the Alaska commercial demonstration project.
    - National Science Foundation – http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=134023

Task 2:

- 30 kw turbine assembly and testing in Maine
    - Team continued 30kW system design work for the Alaska prototype.
    - Team continued speaking with vendors to identify and secure the key components of the prototype.
    - Team has selected a generator design for the turbine that is in testing.

Task 3:

- Test experience and data from the previous prototype continues to inform the development of the instrumentation plan
- Team has identified preliminary sensors and instrumentation for the 30kW system

Future Work

Task 1:

- Site Selection
    - Preliminarily completed (Eva Creek), unless future permitting problem arises.

- Permitting
    - Work with FAA and airspace consultants to complete FAA aeronautical evaluation of Eva Creek site.
    - Begin formulating permitting strategy for Fish & Wildlife approval of Eva Creek Site

- Community Assessment (after FAA permitting)
    - Initiate follow up conversations to test hypothesis of no community concerns at Eva Creek site, and evaluate need for a Community Forum.

Task 2:

- Complete Alaska prototype full pilot design
    - Complete refined design of inflatable shell, including final material selection and structural design
    - Complete generator selection and rotor/turbine design.
    - Complete design of ground station and final winch and tether selection.
    - Update controls and communication system, including remote monitoring and data collection.
    - Implement fault detection and handling capabilities.
    - Work to improve total system reliability.

Task 3:

- Instrumentation plan and shakedown test plan
    - Develop initial test plan for 30kW turbine after design completed.